

CLAIMS

1. Apparatus, comprising:
 - a) a shaft;
 - b) a trough radially extending from the shaft; and
 - c) a perforated barrier which catches debris, and causes the debris to tumble into the trough.

2. Apparatus, comprising:
 - a) a shaft;
 - b) a first perforated trough supported by the shaft at a first axial position, and extending radially from the shaft;
 - c) a second perforated trough supported by the shaft at a second axial position, and extending radially from the shaft; and
 - d) a perforated barrier, extending between the first and second troughs.

3. Apparatus according to claim 2, wherein the first and second perforated troughs occupy different circumferential positions.

4. Apparatus according to claim 2, wherein an axis is defined within the shaft, and the perforated barrier is not coplanar with the axis.

5. Apparatus according to claim 2, wherein the perforated barrier passes sand particles but block debris, when the apparatus is inserted into, and moved within, a fluidized sand bed.

6. Apparatus, comprising:
 - a) a shaft;
 - b) a first trough
 - i) extending radially from the shaft,
 - ii) having a perforated bottom, and
 - iii) having an open top, and
 - c) a perforated chute which
 - i) catches debris which moves across the top of the first trough, and

- ii) delivers the debris to the first trough.
- 7. Apparatus according to claim 6, and further comprising:
 - a) a second trough extending radially from the shaft, but at a different axial position than the first trough;
 - b) a second perforated chute which
 - i) catches debris which moves across the top of the second trough, and
 - ii) delivers the debris to the second trough.
- 8. Apparatus according to claim 7, wherein the first chute extends between the first and second troughs.
- 9. Apparatus according to claim 6, wherein the perforated chute is effective to pass sand in a fluidized bed, when the apparatus is moved through said sand.
- 10. A system, comprising:
 - a) a tank containing fluidized solid particles but no liquid;
 - b) a perforated cage; and
 - c) means for moving the cage to selected positions within the tank, without involvement of muscle power to lift the cage.
- 11. System according to claim 10, wherein the cage comprises an inclined deck containing perforations.
- 12. System according to claim 11, wherein the deck comprises a woven screen, and the woven screen contains the perforations.
- 13. Apparatus, comprising:
 - a) an elongated support;
 - b) a helical surface which
 - i) surrounds, and is attached to, the support; and
 - ii) contains perforations;
 - c) a plurality of walls, extending radially from the support, each of which cooperates with the helical surface to form a valley; and

- d) for each valley, an outer wall, upstanding from the helical surface, which bounds the valley.
14. A method, comprising:
- a) maintaining a fluidized bed in a tank;
 - b) maintaining a controller and at least one program which runs on the controller;
 - c) maintaining a crane which
 - i) is controlled by the controller,
 - ii) supports a perforated cage;
 - d) causing the controller to move the perforated cage to a sequence of positions with the tank, under control the program, and then remove the perforated cage from the tank.
15. Method according to claim 14, and further comprising:
- e) maintaining a second program, which causes the stroller to move the perforated cage to a different sequence of positions within the tank.
16. Method according to claim 14, wherein the perforated cage comprises troughs, and further comprising:
- e) causing the perforated cage to rotate and thereby sweep debris in the fluidized bed into the troughs.